

LISTING OF CLAIMS

1. (Currently Amended) A method for providing data from a client to an access concentrator using a gateway, the method comprising the steps of:

receiving, at a gateway, a frame including data intended for receipt by an access concentrator that supports PPPoE, wherein if the frame is a non-PPPoE frame from thea
client that does not support PPPoE, ~~wherein the non-PPPoE frame includes data intended for receipt by an access concentrator that supports PPPoE;~~

—— encapsulating, at the gateway, the first non-PPPoE frame to generate a PPPoE frame, wherein the PPPoE frame includes the data intended for receipt by the access concentrator;₁
and

—— providing the PPPoE frame to the access concentrator from the gateway thereby establishing a virtual PPPoE session for the client that does not support PPPoE; otherwise, if the frame is a PPPoE frame from a client supporting PPPoE, forwarding the frame from the gateway to the access concentrator without additional gateway processing.

2. (Original) The method of Claim 1, further comprising the step of initiating a PPPoE session between the gateway and the access concentrator for the client.

3. (Original) The method of Claim 1, wherein the non-PPPoE frame includes an IP packet.

4. (Original) The method of Claim 1, wherein the gateway includes one of a group consisting of: a digital subscriber line modem, a cable modem, a router, and a wireless access point.

5. (Original) The method of Claim 1, wherein receiving the non-PPPoE frame from the client includes the steps of:

receiving, at an input interface, the non-PPPoE frame from the client;

providing the non-PPPoE frame to a bridge;

forwarding the non-PPPoE frame to a PPPoE stack from the bridge.

6. (Original) The method of Claim 5, wherein the input interface includes an Ethernet interface.

7. (Original) The method of Claim 5, wherein modifying the non-PPPoE frame to generate a PPPoE frame includes the steps of:

adding, at the PPPoE stack, a PPP header to the non-PPPoE frame to generate a PPPoE frame; and

adding, at the PPPoE stack, a PPPoE header to the PPPoE frame to generate a PPPoE frame.

8. (Original) The method of Claim 7, wherein providing the PPPoE frame to the access concentrator includes the steps of:

providing the PPPoE frame from the PPPoE stack to a frame reflector;

providing the PPPoE frame from the frame reflector to the bridge; and

providing the PPPoE frame from the bridge to an output interface for output to the access concentrator.

9. (Original) The method of Claim 8, wherein the output interface includes a UTOPIA interface.

10. (Original) The method of Claim 9, wherein the output interface further includes a RFC 1483 interface.

11. (Original) The method of Claim 1, further comprising the steps of:

receiving, at the gateway, a PPPoE frame from the access concentrator, wherein the PPPoE frame includes data intended for receipt by the client;

modifying, at the gateway, the PPPoE frame to generate a non-PPPoE frame, wherein the non-PPPoE frame includes the data intended for receipt by the client; and

providing the non-PPPoE frame to client from the gateway.

12. (Currently Amended) A method for providing data from an access concentrator to a ~~non-PPPoE~~ client using a gateway, the method comprising the steps of:

receiving, at a gateway, a PPPoE frame from the access concentrator, ~~wherein the PPPoE frame includes~~ including data intended for receipt by the client; wherein if the data is intended for a non-PPPoE client that does not support PPPoE,

——deencapsulating, at the gateway, the PPPoE frame to generate a non-PPPoE frame, wherein the non-PPPoE frame includes the data intended for receipt by the client; and

——providing the non-PPPoE frame to the non-PPPoE client from the gateway;

otherwise, if the PPPoE frame is intended for a PPPoE client that supports PPPoE,

forwarding the PPPoE frame from the gateway to the client without additional gateway processing;

13. (Original) The method of Claim 12, further comprising the step of initiating a PPPoE session between the gateway and the access concentrator for the client.

14. (Original) The method of Claim 12, wherein the non-PPPoE frame includes an IP packet.

15. (Original) The method of Claim 12, wherein the gateway includes one of a group consisting of: a digital subscriber line modem, a cable modem, a router, and a wireless access point.

16. (Original) The method of Claim 12, wherein receiving the PPPoE frame from the access concentrator includes the steps of:

receiving, at an input interface, the PPPoE frame from the access concentrator;

providing the PPPoE frame to a bridge; and

providing the PPPoE frame from the bridge to a PPPoE stack using a frame reflector.

17. (Original) The method of Claim 16, wherein the input interface includes a UTOPIA interface.

18. (Original) The method of Claim 17, wherein the input interface further includes a RFC 1483 interface.

19. (Original) The method of Claim 16, wherein the step of deencapsulating the PPPoE frame to generate a non-PPPoE frame includes the steps of:

removing, at the PPPoE stack, a PPPoE header from the PPPoE frame to generate a PPP frame; and

removing, at the PPPoE stack, a PPP header from the PPP frame to generate a non-PPPoE frame.

20. (Original) The method of Claim 16, wherein providing the non-PPPoE frame to the client includes the steps of:

providing the non-PPPoE frame from the PPPoE stack to the frame reflector;

providing the non-PPPoE frame from the frame reflector to the bridge; and

providing the non-PPPoE frame from the bridge to an output interface for output to the client.

21. (Original) The method of Claim 20, wherein the output interface includes an Ethernet interface.

22. (Currently Amended) A method for transporting data among clients and access concentrators, the method comprising the steps of:

- receiving, at a bridge, a first frame having a PPPoE format from a first client that supports PPPoE, wherein the first frame is intended for receipt by an access concentrator;
- receiving, at the bridge, a second frame having a non-PPPoE format from a second client that does not support PPPoE, wherein the second frame is intended for receipt by the same access concentrator;
- providing, from the bridge, the first frame directly to an interface for output to an access concentrator without bridge protocol conversion;
- providing, from the bridge, the second frame as an IP packet to an IP stack;
- routing the IP packet to a PPPoE stack;
- encapsulating, at the PPPoE stack, the IP packet into a third frame having a PPPoE format; and
- providing the third frame to the interface for output to an access concentrator.

23.-24. Cancelled.

25. (Original) The method of Claim 22, wherein providing the first frame to the interface includes the steps of:

- determining a destination media access control address of the first frame; and
- providing the first frame to the interface when the destination media access control address of the first frame includes a media access control address of a network device accessible by the interface.

26. (Original) The method of Claim 25, wherein providing the second frame as the IP packet to the IP stack includes the steps of:

determining a destination media access control address of the second frame; and
providing the second frame as the IP packet to the IP stack when the destination media access control address of the second frame is an media access control address of an interface attached to the bridge.

27. (Original) The method of Claim 22, wherein encapsulating the IP packet to generate the third frame includes the steps of:

adding a PPP header to the IP packet to generate a modified frame; and
adding a PPPoE header to the modified frame to generate the third frame.

28. (Original) The method of Claim 27, wherein providing the third frame includes the steps of:

assigning a destination media access control address to the third frame corresponding to a media access control address of a frame reflector used to transmit the third frame between the PPPoE stack and the bridge;

providing the third frame to the bridge using the frame reflector; and
providing, at the bridge, the third frame to the output interface based on the destination media access control address of the third frame.

29. (Original) The method of Claim 22, further comprising the steps of:
receiving, at the bridge, a fourth frame having a PPPoE format from an access concentrator, wherein the fourth frame from the access concentrator is intended for receipt by the first client, and where the first client is adapted to receive frames having the PPPoE format;

receiving, at the bridge, a fifth frame having a PPPoE format from the access concentrator, wherein the fifth frame is intended for receipt by the second client, and where the second client is adapted to receive frames having a non-PPPoE format;

providing, from the bridge, the fourth frame to an interface for output to the first client;

providing, from the bridge, the fifth frame to a PPPoE stack using a frame reflector; deencapsulating, at the PPPoE stack, the fifth frame to generate a sixth frame having the non-PPPoE format; and

providing the sixth frame to the interface for output to the second client.

30.-41. Cancelled